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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/685,573 | 10/16/2003 | Gilles Delapierre | 117503 | 7163 |
| 25944 | 7590 | 06/16/2004 | EXAMINER | |
| OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320 | | | WILSON, SCOTT R | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2826 | |

DATE MAILED: 06/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 10/685,573 | Applicant(s) DELAPIERRE, GILLES | |
| | Examiner Scott R. Wilson | Art Unit 2826 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6,8 and 9 is/are rejected.
- 7) ☒ Claim(s) 3 and 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>10/16/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kellam et al. in view of Rossi et al.. As to claim 1, Kellam et al., Figure 1, discloses an integrated electromechanical microstructure comprising a base substrate (11) and a cavity (14) closed by a protective cover (12). Kellam et al. further discloses (Abstract and col. 2, line 58) a high pressure gas contained within the cavity. Kellam et al. does not disclose expressly a pressure adjusting means. Rossi et al., Figures 4 and 5, discloses a miniature valve for filling the reservoir of an apparatus for transdermal administration of medicine which includes a pyrotechnic material (5), the combustion of which releases gas into a cavity (col. 3, lines 28-29). Rossi et al., Figure 5, discloses that the expansion of high pressure gas is sufficient to expand an inflatable envelope (12). At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the gas expansion means of Rossi et al. with the MEMS device of Kellam et al.. The motivation for doing so would have been to increase the gas pressure within the cavity of Kellam et al., especially since the cover and substrate of Kellam et al. are inflexible. Therefore, it would have been obvious to combine Rossi et al. with Kellam et al. to obtain the invention as specified in claim 1.

As to claim 2, Rossi et al., Figure 4, discloses that the pyrotechnic material (5) is deposited in the cavity.

As to claim 4, Rossi et al. (Abstract) discloses the pyrotechnic material deposited on an electrical resistor connected to external electrical terminals.

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Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kellam et al. in view of Rossi et al. and further in view of Giust et al.. Kellam et al. in view of Rossi et al. discloses the invention of claim 1, as described above. Kellam et al. in view of Rossi et al. does not disclose expressly a zone made of material transparent at a preset wavelength formed in the protective cover. Giust et al. discloses (col. 8, lines 12-20) an active semiconductor device with a fuse structure, where the fuses are blown by laser irradiation through a protective covering window. At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the laser irradiation through the window of Giust et al. with the MEMS structure of Kellam et al. in view of Rossi et al.. The motivation for doing so would have been to provide localized heating of the pyrotechnic material, since Giust et al. discloses that the laser irradiation causes enough localized heating to blow fuses formed in metal (col. 2, lines 39-45). Therefore, it would have been obvious to combine Giust et al. with Kellam et al. in view of Rossi et al. to obtain the invention as specified in claim 5.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kellam et al. in view of Rossi et al. and further in view of Casiday et al.. Kellam et al. in view of Rossi et al. discloses the invention of claim 1, as described above. Kellam et al. in view of Rossi et al. does not disclose expressly the pyrotechnic material formed from sodium nitride, potassium nitrate and silica. Casiday et al., page 4, discloses a pyrotechnic material used in airbags comprising sodium nitride, potassium nitrate and silica. At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the material of Casiday et al. with the MEMS structure of Kellam et al. in view of Rossi et al.. The motivation for doing so would have been to produce nitrogen gas, as disclosed by Casiday et al. Therefore, it would have been obvious to combine Casiday et al. with Kellam et al. in view of Rossi et al. to obtain the invention as specified in claim 6.

As to claim 8, Rossi et al., Figure 4, discloses a process for adjusting the pressure in the cavity of what would be the microstructure of claim 1, comprising ignition of a pyrotechnic element (5) after the protective cover, corresponding to the inflatable envelope (12) has been sealed.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kellam et al. in view of Rossi et al. and further in view of Giust et al.. Kellam et al. in view of Rossi et al. discloses the invention

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of claim 8, as described above. Kellam et al. in view of Rossi et al. does not disclose expressly a zone made of material transparent at a preset wavelength formed in the protective cover. Giust et al. discloses (col. 8, lines 12-20) an active semiconductor device with a fuse structure, where the fuses are blown by laser irradiation through a protective covering window. At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the laser irradiation through the window of Giust et al. with the MEMS structure of Kellam et al. in view of Rossi et al.. The motivation for doing so would have been to provide localized heating of the pyrotechnic material, since Giust et al. discloses that the laser irradiation causes enough localized heating to blow fuses formed in metal (col. 2, lines 39-45). Therefore, it would have been obvious to combine Giust et al. with Kellam et al. in view of Rossi et al. to obtain the invention as specified in claim 9.

Allowable Subject Matter

Claim 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. No prior art discloses an additional cavity containing pyrotechnic material, linked by a micro-orifice.

Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. No prior art discloses a plurality of pyrotechnic elements able to be selectively ignited.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott R. Wilson whose telephone number is 571-272-1925. The examiner can normally be reached on M-F 8:30 - 4:30 Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

srw
June 8, 2004

NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800